

LACTOSE INTOLERANCE



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Many people, including community health professionals, are confused about the difference between lactose intolerance and cows' milk protein allergy. Food hypersensitivity is the term that has been recommended by the World Allergy Organisation (WAO) to refer to all reactions to food that are not psychologically based (1).

The WAO defined food hypersensitivity as any objectively reproducible symptoms or signs that could be reproduced even if disguised (blind). If immunologic symptoms can be demonstrated, then the reaction is defined as food allergy, again subdivided into IgE mediated if the reaction can be attributed to IgE (this is what was previously known as food allergy), or non-IgE mediated if other immunological mechanisms are involved (previously known as food intolerance). All other reactions should be known as non-allergic food hypersensitivity.

NICE (2) has recently published guidance for the diagnosis and assessment of allergy in children and young people in primary and community settings to aid community practitioners (primarily GPs) in the assessment, diagnosis and care of children and young people with allergic reactions. However, a key confusion among GPs and health visitors alike, is the difference between lactose intolerance and cows' milk allergy in infants.

- Lactose intolerance is the inability to digest lactose (milk sugar), due to the relative or absolute absence of the enzyme lactase in the small bowel.
- Cows' milk allergy is caused by an allergic response to one or more of the milk proteins.

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Lactose intolerance, as described above, is caused by varying degrees of deficiency of the enzyme lactase in the brush border of the small intestine. Lactose that remains undigested in the bowel causes osmotic diarrhoea and is also fermented by colonic bacteria. This results in symptoms such as abdominal disten-

sion, flatulence and explosive watery diarrhoea, which is often acidic, causing irritation to the perianal area, seen as severe nappy rash in babies. It may be caused by the following:

- Primary alactasia - a rare, hereditary condition characterised by profuse, watery diarrhoea from birth. Symptoms occur as soon as the first feeds of breast milk or infant formula are given. Treatment is total and life-long avoidance of lactose. Breast-feeding is contraindicated as it contains lactose, so a lactose-free formula must be used instead (see later in the article). Paediatric dietetic advice is vital from weaning to ensure that weaning foods are lactose free and that the diet is nutritionally adequate.
- Primary lactase deficiency causes progressive lactose intolerance from late childhood. This varies between ethnic groups, being rare in Northern Europeans, to almost endemic in some Asian and African populations. Some milk is usually tolerated (for instance in tea and coffee), but ingestion of larger amounts will lead to diarrhoea. It is important that sufficient calcium and Vitamin D are obtained from other sources to support bone health.
- Secondary lactase deficiency is the most commonly seen in clinical practice. Typically an infant will suffer from gastroenteritis causing diarrhoea, which recurs whenever milk is regraded into the diet. This is caused by damage to the villi by the infection. Since the lactase enzyme sits at the end of gut villi, it is very vulnerable to damage. Treatment is six to 12 weeks of a lactose-free formula (and diet if the infant is weaned), after which time the baby can

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usually be regraded back onto a normal formula. If this occurs post weaning, dietetic advice will be needed to ensure that the infant avoids sources of lactose, while consuming an otherwise adequate diet. Other gut conditions in all ages, such as coeliac disease, Crohn's disease and ulcerative colitis, or other conditions causing gut damage may lead to lactose intolerance; this may well resolve once the underlying condition is controlled.

- Colic is a controversial manifestation of lactose intolerance. Colic is defined as a baby crying for more than three hours a day, for more than three days a week, for at least three weeks. It is a debilitating, if common condition in early infancy that usually resolves by three to four months, but it can cause considerable anxiety and distress to parents. Parents can also find it very debilitating, as dealing with a baby who cries for several hours every day is extremely tiring. The cause(s) of colic are largely unknown, but one theory is that, in some babies, symptoms may be caused by lactose intolerance. Therefore, in a bottle fed baby, where symptoms are not resolving with other common measures (e.g. changing bottles/teats, colic drops, reassurance), a trial of lactose-free formula may be indicated. Where helpful, symptoms usually resolve within a couple of days. As the natural history of colic is that it is a relatively short-lived condition, the baby will probably be able to go back on to a normal formula and diet by the time of weaning.

LACTOSE-FREE DIET

1. Infant formula in infancy

Historically, lactose intolerance in infancy was treated with a soya infant formula, but these have not been recommended in the last 10 years (3,4) - particularly in infants under six months - because of the theoretical risks to future fertility (particularly in boys), but also because of the significant risks of cross reactivity with cow's milk protein, particularly an issue for infants with non-IgE mediated cow's milk allergy. However, lactose free infant formulas are available. These contain cows' milk protein and all the other usual ingredients of a normal infant formula, except the lactose is replaced by another carbohydrate.

Since some community health professionals do not understand the difference between lactose intolerance and cow's milk allergy, nor the differences between different formulas, there is a risk that an unnecessarily specialist formula, which is not needed (and is more expensive) will be used. Ensuring that these formulas are only used when necessary, only prescribed when parents genuinely cannot afford the relatively modest extra cost and stopped when no longer needed, is a serious issue within the increasingly difficult financial climate facing the NHS.

Anecdotally, community health professionals recognise that 'social prescribing' of these formulas is an increasing issue. That is, families will attend the GP asking for these formulas to be prescribed alleging 'colic' or other symptoms, to avoid paying for their formulas. As GPs are often unsure of the indication and longevity of need, once started, these formulas are often used for an inappropriately long time; an issue we are looking at in North Wales at present.

2. Diet

As already described, many infants will no longer need a lactose-free diet once they reach weaning. However, for those individuals of all ages who need a lactose-free (or low lactose) diet - but particularly infants and children - it is important that they receive advice from a dietitian. The diet is similar to milk free, but with important differences. Many individuals with lactose intolerance will tolerate some low lactose milk containing foods within the diet. Butter and cream contain little lactose and are therefore often tolerated. Some hard cheeses such as parmesan, Emmental and West Country cheddar are low in lactose and so will often be tolerated. Some individuals will tolerate yoghurt; for instance, one yoghurt a day may be fine, but increased quantities will cause diarrhoea. Individuals with lactose intolerance will usually tolerate the small amounts of lactose in baked goods, but may not tolerate foods (or medications) where lactose has been used as a filler. Trial and error is needed to establish the individual threshold for symptoms. The cause of the lactose intolerance (that is whether it is following gastroenteritis/other gut disorder or due to inherited primary lactase deficiency) will determine whether tolerance is likely to get better or worse with age and the patient advised accordingly. From the age of one year, lactose free milks and dairy products are available from the supermarket, which can help to ensure that adequate amounts of calcium are consumed.

CONCLUSION

In infancy, most patients with lactose intolerance will be able to return to a normal diet in a matter of weeks or months; in any case, prescribed products will almost never be needed after the first birthday. In contrast, in older patients, lactose intolerance may in fact become more problematic with time and it should be ensured that they have advice on ingesting enough alternative foods to meet their calcium requirements. Where lactose intolerance is secondary to other disease processes, patients should be encouraged to review their intake of lactose if their gut health improves. However, with many people self-diagnosing lactose intolerance, supermarket products have risen up to meet the demand, meaning it has never been easier to follow a lactose-free diet.

References

- 1 Johansson SGO, Bieber T, Dahl R et al (2004). Revised nomenclature for allergy for global use: Report of the Nomenclature Review Committee of the World Allergy Organisation. *JACI* 113, 832-836
- 2 NICE (2011). CG 116 Food allergy in children and young people: Diagnosis and assessment of food allergy in children and young people in primary care and community settings. www.nice.org.uk/nicemedia/live/13348/57929/57929.pdf
- 3 CMO (2004). Update No. 37 www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4070176.pdf
- 4 Paediatric Group of the British Dietetic Association Position Statement (2010). Use of infant formulas based on soy protein for infants. www.bda.uk.com/publications/PaediatricGroupGuidelineSoyInfantFormulas.pdf

Questions relating to: *Lactose intolerance.*

Type your answers below and then **print for your records**. Alternatively print and complete answers by hand.

Q.1	What is the difference between food hypersensitivity and food allergy?
A	
Q.2	Define IgE mediated and non-IgE mediated reactions.
A	
Q.3	What is the difference between lactose intolerance and cows' milk allergy?
A	
Q.4	What are the main symptoms of lactose intolerance?
A	
Q.5	Briefly outline the four main causes of lactose intolerance.
A	
Q.6	Why is soya infant formula no longer recommended in the treatment of infant lactose intolerance?
A	
Q.7	What is the diet required for lactose intolerant infants after weaning?
A	
Q.8	Give some examples of foods containing lactose that can often be tolerated.
Q.9	What is the prognosis for most patients with lactose intolerance?

Please type additional notes here . . .